testified to the success of his training. Profs. Ludwig (Bonn), Braun (Königsberg), Spengel (Giessen), Kennel (Dorpat), Kossmann (Heidelberg), Carrière (Strassburg), and Fraisse (Leipsic), and the Privat-Docenten Ludwig Will, Biehringer, Voigt, Schuberg, and others, still represent the old Würzburg Institute in more than half of the Universities of Germany. Pupils came to him from all parts of the world. Of his contemporaries only two, Albert von Kölliker and Rudolf Leuckart, can claim a longer array of scholars, and none have trained more successful investigators. Among those who pride themselves on their studies in the quaint old rooms overlooking the Neubaustrasse are R. S. Bergh, C. S. Minot, H. Jungersen, Sharp, Strubell, Goronowitch, Grassi, and the cousins Sarasin. From Great Britain came but two, the late Philip Carpenter and the writer.

The peculiarity of Semper's training consisted in this:—The budding zoologist was first thoroughly grounded in comparative anatomy and histology, and then only, after a preliminary trial on some well-worked theme, might he commence independent investigation. The work once begun, the student received abundant criticism but no help, and thus while Semper guided the worker, he never performed the task himself. In this way the memoirs of his pupils came to be not the work of a school in which the master alone was in evidence, but a series of papers dealing with widely divergent questions, and having only this in common that they were built on the same solid basis of elementary knowledge.

Semper was above all the close friend of his pupils, and with them he formed a small "Verein," in which he took considerable pride. The evenings—which usually became early mornings—spent in the little "Alt-deutsche Stube" of the "Zoological Garden" down the Main will not readily fade from recollection. Then it was that the conversation—French, German, and English—more frequently turned to zoological travel, and discussions on current zoology gave place to little lectures on the Philippines and Palau Islands, on Heligoland and the Riviera, on tropical animals and plants. The educational importance of travel to the young zoologist was an ever-recurring topic with Semper. The advice usually had good effect, for most of his pupils have at one time or another made zoological journeys to distant parts of the world—to Ceylon, to Trinidad, to Greenland, the Celebes, and other places.

One of Semper's ideals was a new laboratory with a tropical house for animals. After long treaty with the Government he was happy in obtaining the completion of his wishes—the new Zoological Institute, a building worthy of the architect-zoologist. Three short years ago we who were his old pupils rejoiced with him on the opening of the new abode. Now, as he would bid the fleeting moment stay, he is taken from us. The director's room is vacant, our chief and our "Studentenzeit" are alike memories, on both of which we can only dwell with fondness and affection.

J. Beard.

NOTES.

We regret to record that M. Marié Davy died on July 16, at Clamecy, Nièvre, at the age of seventy-seven. M. Davy was at one time at the head of the physical-astronomy service of the Paris Observatory, and took a leading part in the protest against Le Verrier's administration in 1870. He published a large number of papers on electrical and astronomical subjects.

Prof. S. P. Langley, Secretary of the Smithsonian Institution, announces that the Institution has secured a table at the Naples Zoological Station for the use of American investigators. The table will be known as the Smithsonian table. Publications resulting from its use will bear the name of the Smithsonian Institution, and such of them as are of sufficient importance will be printed in the "Smithsonian Contributions to Knowledge."

The munificent gifts of the legatees of Sir Joseph Whitworth to Manchester are to be increased by a sum of £50,000. The amount previously given by them to carry out the scheme of the Whitworth Institute was £105,000. The legatees consider, however, that even their additional donation will need supplementing by the public if the institute is to attain its due importance.

The International Maritime Congress commenced its second meeting on July 18 at the Institution of Civil Engineers, under the presidency of Lord Brassey. A large number of British and foreign representatives of maritime interests were present, and the outcome of the week's conference will doubtless be of considerable importance. Lord Brassey took for the text of his presidential address the construction and use of breakwaters, and the works that have been undertaken for the improvement of the entrances to ports. Mr. Mundella, M.P., followed with a description of the growth of the mercantile marine service of Great Britain. The Congress then divided into sections for the reading and discussion of papers. Lord Swansea presided over the section dealing with questions relating to the construction of harbours, breakwaters, and general sea-works; and Admiral Colomb is the president of the section devoted to signals, lights, and buoys. The papers read before these two sections were chiefly of a technical character.

At the recent Congress of Archæological Societies a subject that elicited an interesting discussion was the "Continuation of the Archæological Survey of England." It was announced that the archæological maps of Essex, Lancashire, Cheshire, Surrey, Sussex, and Derbyshire had been considerably advanced since the meeting of last year. Maps are being prepared by societies in Herefordshire, Cumberland, and Westmoreland, on which all interesting antiquities are indicated. A series of symbols has been devised by the Standing Committee for the diagrammatic representation of antique objects and sites, and a resolution was passed expressing a hope that all societies participating in the survey will adopt these symbols and so ensure uniformity. Mr. H. S. Pearson, of the Birmingham and Midland Institute Archæological Society, gave a detailed description of a photographic survey of the county of Warwick. Each photographer who took part in the work was assigned a district of about six square miles, and their pictures were subjected to the criticism of a committee, in order to determine whether they were "worthy of acceptation.' Up to now about 1,700 excellent photographs have been taken, and permanent prints of them have been well mounted and presented to the Birmingham Free Library, so that they could be referred to at any time. Mr. Pearson's paper was cordially received, Sir John Evans expressing his warm approval, and bidding all archæological societies throughout the country to "Go and do likewise." The Archæological Institute also held its annual meeting last week. There was a reception at the Guildhall, several excellent luncheons, with pleasurable and doubtless profitable excursions, and a *conversazione* at the Mansion House, so the meeting was a decided success, though no papers were read or discussion raised of scientific moment.

At the annual meeting of the Wilts Archæological Society, to be held at Warminster on July 25 and two following days, the President, General Pitt-Rivers, F.R.S., will give an account of some excavations he has been recently making in an early camp in Cranborne Chase, near Rushmore, Salisbury, and adjacent to the group of tumuli of the Bronze Age, which were investigated by him in 1880 in conjunction with the late Prof.

Rolleston. The address will be illustrated by plans and sections, and two models will be exhibited showing the entrenchment before and after excavation.

A NUMBER of water-colour drawings, executed by the artists of the Archæological Survey of Egypt, are being exhibited at the residence of the Marquis of Bute, K.T., 83, Eccleston Square, S.W., and will remain on view until Saturday next. The collection of drawings comprise sketches by Mr. Percy Buckman of various sites of historical interest in the provinces of Minich and Assint, a large number of facsimile drawings of wall paintings in tombs of the ancient and middle kingdoms in the same province by Mr. Buckman, Mr. Blackven, and Mr. Howard Carter, as well as many architectural drawings from the tombs by Mr. John Newberry. Cards for admission to the exhibition may be had on application at the offices of the Egypt Exploration Fund, 37, Great Russell Street, W.C.

THE new laboratories at Guy's Hospital were opened on July 17 by Sir John Lubbock, Bart., M.P., F.R.S., a number of men of science being present. In the course of his remarks Sir John Lubbock said that great and brilliant as had been the discoveries in science during the last fifty years, that of the next would be grander still. He based his belief on three grounds. First, because while knowledge was finite science was infinite; secondly, because new processes and inventions were constantly being applied to research; thirdly, the number of investigators was greater and would go on increasing. He hoped that in the laboratories opened that day new steps would be taken in the triumphal progress of science. Sir John Lubbock subsequently presented the scholarships, medals, and prizes, to the successful students, and delivered an interesting address in which he pointed out the necessity of administering kindly advice and sympathy "to a mind diseased" as well as medicine to the body.

MR. R. LYDEKKER is about to visit the museums of Buenos Ayres and La Plata in order to examine the collections of fossil mammals and birds, a grant for that purpose having been made to him by the Royal Society.

THE Japanese section of the Cornwall Counties Fisheries Exhibition, shortly to be held at Truro, is being organised by a committee of the Council of the Japan Society, and promises to be attractive and interesting. Numerous exhibits, illustrating the fisheries of Japan, are now on their way to England, and many collectors of Japanese works of art have promised to lend objects representing fish and fishing.

THE British Consul at Porto Rico has reported to the Foreign Office that it is proposed to hold an exhibition in that city in November next to commemorate the four hundredth anniversary of the discovery of the island of Porto Rico. The exhibits will include agricultural and industrial implements and machinery, and other objects that are or may become articles of commerce. Space will be granted to exhibitors free of charge, and must be applied for by September 1. All exhibits will be admitted free of customs duty.

FROM September 3rd to 6th a meeting will be held at Lausanne in connection with the Société Helvetique des Sciences Naturelles. There will be a general assembly of the Swiss geological, botanical, and entomological societies, and also various geological and zoological excursions. A detailed programme of the excursions can be had on application to one of the Secretaries, Prof. E. Bugnion, or M. A. Nicati, Lausanne.

THE *Société de Topographie de France* intend to erect a statue of Cassini, the author of the first topographical map of France, in the town of Clermont-en-Beauvais (Oise), not far from Thury. It is a remarkable fact that the family of Cassini had, in a century and a half, five representatives as Members of the Academy of Sciences, of which four were directors of Paris Observatory, the third of them—César François Cassini, of Thury (1714-1784),—being the one whose memory will be honoured.

A REUTER'S telegram reports that the steamer *Falcon*, with Lieut. Peary and the members of the American Polar Expedition, sailed on July 15 from St. John's, Newfoundland, for Bowden Bay, the autumn quarters of the expedition.

THE arrangements are now completed for the celebration of the jubilee of the Rothamsted agricultural experiments at the Laboratory, Harpenden-common, on Saturday, the 29th inst., at 3 p.m., under the presidency of Mr. Herbert Gardner, M.P., President of the Board of Agriculture. The proceedings will commence with the dedication by Mr. Gardner of a granite memorial, erected in front of the Rothamsted Laboratory, to commemorate the occasion. Addresses of congratulation will then be presented to Sir John Lawes and Dr. Gilbert on behalf of the subscribers to the Rothamsted Jubilee Fund and various learned societies, including the Royal, Royal Agricultural, Chemical, Linnean, and other leading scientific institutions. Sir John Lawes will also be presented with his portrait, which has been painted by Mr. Hubert Herkomer, R.A., for the subscribers to the Jubilee Fund. Afterwards there will be a reception at Rothamsted by Lady Lawes. The Rothamsted Laboratory, where the ceremony will take place, adjoins Harpenden-common, and is distant about half a mile from the Harpenden station of the Midland Railway Company.

IT is reported that disastrous floods and landslips, caused by heavy rains and cloudbursts, have occurred in Tyrol, the principal scene of destruction being the upper and lower Inn Valleys, the Oetzthal, and the Zillerthal. Many houses have been swept away, together with the inhabitants and their cattle, while others have been buried by landslips.

SOME very heavy falls of rain occurred in the southern part of England on Saturday and Sunday last, owing to the passage of a small and shallow cyclonic disturbance, which travelled quickly to the eastward. The amounts recorded in several localities exceeded an inch within twenty-four hours, while at Eastbourne the fall was from two to three inches, or more than the average amount for the month of July. The accumulation of water at the latter place was due to the intensity of the fall during a short period; the amount recorded during the whole day has frequently been exceeded at other places.

IN a recent number of the new Russian journal (*Archives des Sciences Biologiques publiée par l'Institut Impérial de Médecine Expérimentale à St. Pétersbourg*, vol. i. no. 5) an account is given of the latest endeavours to secure protection against glanders. It would appear from the experiments here recorded that as a means of diagnosing glanders the "malléine" (extracted from cultures of the glanders bacillus) is of great value. On being inoculated into horses suspected of having glanders, and into healthy animals or horses suffering from some other disease respectively, the different effect produced was constant and very clearly defined. In the case of the former, the existence of glanders was indicated by a distinct rise in temperature, from 1°·5 to 3° C., and the formation of a tumour, whilst in the latter the temperature did not rise, or only very slightly, and an insignificant tumour, or none at all, was produced at the place of inoculation. Innumerable experiments on horses by various investigators confirm these results, and as a proof of the importance which is attached to these researches, it may be mentioned that only last September a circular was addressed by the German Government to the commanders of cavalry, ordering the injection of "malléine" into the horses of those regiments where cases of glanders were proved to have occurred.

The fact that some micro-organisms may stimulate or depress the vitality or virulence of others has been taken advantage of by both Sanarelli and Chantemesse and Widal in their recent researches on immunity and typhoid fever (*Annales de l'Institut Pasteur*, 1892). The typhoid bacillus very rapidly loses its pathogenic properties when cultivated for any length of time outside the living body. Its virulence may, however, be revived by introducing it into an animal along with sterilised cultures of some special organisms. Sanarelli used sterilised cultures of the *B. coli communis*, beginning with 10-12 cc., and gradually diminishing the dose, until the typhoid bacillus, as taken from the last animal, proved virulent without any addition. Sterilised cultures of the *Proteus vulgaris* may, according to Sanarelli, be also used. Chantemesse and Widal obtained the same results by employing sterilised cultures of the *Streptococcus pyogenes*, it having been found by Vincent that in the most serious cases of typhoid fever which he examined the latter was present along with the typhoid bacillus.

The true origin of contrast colours is still a much-debated question among physicists. The Young-Helmholtz hypothesis of colour sensation assumes that the perception of a contrast colour by which, for instance, a shadow cast by a candle in daylight appears blue, is due to an error of judgment brought about by falsely taking the candle as representing white light and "dividing the difference of tint between the various portions of the surface equally between them." Mr. Alfred M. Mayer, in the *American Journal of Science*, attempts to show by a series of experiments that the perception of contrast-colour is due to purely physiological, and not to psychical causes. Some careful chronograph experiments showed that the perception of a contrast colour did certainly not require more than one-fifteenth of a second. A spark from a Holtz machine, lasting a millionth of a second and 8cm. long, made a grey ring on an emerald green ground appear a bright pink. The spark was also passed between brass knobs placed in front of a piece of silvered mirror half covered with a piece of green glass. The path of the spark presented a remarkable appearance. The portion reflected from the mirror only was white, while the other portion consisted of two images reflected by the green glass and the mirror respectively. The former appeared red by contrast, and the latter was coloured green by transmission through the glass. Thus a white source appeared both white and red at the same instant. The hypothesis of a knowledge of the real whiteness of the surface illuminated partly by a candle and partly by daylight influencing the perception of contrast colours was refuted by arranging such a surface behind a screen and letting two independent observers view it through a tube showing two semi-circles in juxtaposition. They were misled as to what to expect, but they both immediately described the patches as yellow and sky-blue respectively. These experiments tend to confirm Hering's hypothesis, which assumes that when a portion of the retina is stimulated, adjoining portions are affected by a sort of inductive action producing complementary perceptions.

An interesting note on the variation of the earth's magnetism in the neighbourhood of a hill containing magnetic rocks, by Messrs. Oddone and Franchi, has appeared in the *Annali dell' Ufficio Centrale di Meteorologia e Geodinamica* (vol. xii. part 1). The hill was composed of serpentine, and had, roughly speaking, a lenticular shape, being 1500 m. long and 500 m. broad, with its greatest length north-west and south-east. The declination is the only element up to now observed, and the variation of this element along certain lines has been determined by means of a large compass, to which a telescope, moving in a vertical plane, was attached. The needle, about 16 c.m. long, had a fine pointer attached, and its position was read by means of a scale engraved on looking-glass. A preliminary series of observations, made on ground where there was no disturbance, showed that this instrument could be depended on to within one or two minutes of arc. The method of observing followed was to set up the instrument, and, looking through the telescope, note a series of points, all in a straight line with some distant object, then to clamp the horizontal scale to the telescope support, and read the ends of the needle. The instrument was then transported to the points which had been noted, and the telescope directed to the distant mark. Then the differences in the readings for the needle gave the differences in the declination at the stations along the line. As an example of the magnitude of the deviations obtained we may give the following set of readings (corrected for diurnal variation), along a line running north-east from the hill. At the out-crop of the serpentine the reading for the needle was 11° 20′; about 100 m. away, 10° 35′; about 500 m. away 9° 56′ 30″; while at a distance of 700 m. it was 9° 50′ 30′. In every case they obtained an attraction of the north pointing pole of the needle towards the serpentine, thus indicating that the mass of rock was magnetised with its upper end a south pole.

M. Felix Leconte has invented a simple form of automatic cut-out, consisting of a cylindrical metal vessel containing mercury and closed at the bottom by a plate of iron held up by springs. A copper rod dips into the mercury and forms one terminal, the current passing through the mercury to the metal cylinder, which forms the other terminal. Beneath the piece of iron an electro-magnet is placed, which is connected with an electric battery, whose circuit is closed at any pre-arranged time by a contact fixed to a clock. When this contact is made, the electro-magnet attracts the iron, allows the mercury to escape, and thus breaks the main current.

A memoir on prehistoric naval architecture of the north of Europe, by Mr. George H. Boehmer, has been issued by the U.S. National Museum. 'Tis "a tale of the times of old," and therefore full of interest to the student of history. Furthermore, it is written with technical knowledge, and bristles with references, and therefore commands the respect of the scientifically-cultured mind. In the memoir the build of thirty ships, discovered in various places, is explained by text and illustration. And the whole discussion indicates that the maritime explorations of the people of the south, the Phœnicians, influenced the character of the naval structures of the ancient inhabitants of Scandinavia. Of all the boats that have been excavated none seem to excel in beauty that found at Gokstad, Norway, in 1880 and now in the Archæological Museum of the Royal Frederichs University at Christiania. In the opinion of experts this boat is a masterpiece of its kind, not to be surpassed by aught which the shipbuilding craft of the present age could produce.

We have received the first number of *The Physical Review*, a journal of experimental and theoretical physics conducted by Mr. G. L. Nichols and Mr. E. Merritt, and published for Cornell University by Messrs. Macmillan and Co. The new publication is on much the same lines as the *Philosophical Magazine*. It contains five papers on physical subjects, a few notes, and critical articles on several new books. Mr. Nichols writes on the transmission spectra of certain substances in the infra-red, and Mr. B. W. Snow on the infra-red spectra of the alkalies. The relation between the lengths of the yard and the metre form the subject of a paper by Mr. W. A. Rogers. Messrs. S. Sheldon and G. M. Downing write on the critical current density of copper deposition, and the absolute velocity of migration of the copper ions, and Messrs. F. Bedell and A. C. Crehore give a geometrical proof of the three-ammeter method of measuring power. We wish the venture the complete success that its high character merits.

WE have received a copy of "The Brighton Life Table," based upon the mortality of the ten years 1881–90, by Dr. Arthur Newsholme. No previous life-table has been constructed for Brighton, so the vital statistics of 1881-90 could not be compared with those of any preceding decennium. Dr. Newsholme has, however, compared his figures with those for the whole of England and Wales between 1871 and 1880, and also with the 1881–90 life-table of Manchester. The comparison indicates that the probabilities of life among both males and females are at most ages greater in Brighton than elsewhere —a result that might have been expected.

WE learn from the *Victorian Naturalist* that Mr. D. M'Alpine, pathologist to the Victorian Department of Agriculture, is preparing for publication by the Department a *Systematic Census of Australian Fungi*, together with a host-index and list of works on the subject. He is desirous of making the list as complete as possible, and will be pleased to receive from workers any published papers, &c., especially on the microscopic forms. It is proposed to continue the list in annual supplements.

THE 1892 report of the Superintendent of the Royal Botanic Gardens, Trinidad, has been received. The experiments instituted by the Government having shown that tobacco of a suitable character for making good cigars can be grown in Trinidad, enterprising planters are beginning to cultivate a sufficient area to make the crop remunerative. Mr. Hart reports that the quality of the product of the district (always a tobacco producing one) in which the operations were conducted, has much improved. The native cultivators have partially adopted the methods employed by the skilled cultivator, hence it is anticipated that the industry will continue to make progress during future years.

MR. M. DUNN, of Trevagissey, has sent us a paper by him on "The Migrations and Habits of the Pilchard," which appears in the annual report of the Royal Polytechnic Society for 1892.

MESSRS. LONGMAN will shortly publish a work entitled and specially devoted to "The Micro-organisms in Water," by Prof. and Mrs. Percy Frankland. It will deal not only with the presence and significance of bacteria in water, but also with the various means of effecting their removal, and an account will be given of what is known concerning the vitality of pathogenic microbes in various waters. A tabulated description of the micro- and macroscopic characters of all the micro-organisms, both pathogenic and non-pathogenic, hitherto discovered in water will be appended, whilst a special part will be devoted to the methods involved in the bacteriological examination of water. The work is intended to serve as a handbook for all interested in the sanitary aspects of water supply.

A CATALOGUE of books issued by Mr. Charles Lowe, New-street, Birmingham, contains the titles and descriptions of a number of scientific works for sale and wanted.

A CONSIDERABLE number of metallic salts of sulpho-phosphoric acid, H_3PS_4, have been obtained in a pure state by Dr. Glatzel of Breslau, and are described in the current number of the *Zeitschrift für Anorganische Chemie*. They are prepared by heating an anhydrous mixture of the chloride or sulphide of the metal with phosphorus pentasulphide, being produced in accordance with the equations:—

$$3RCl + P_2S_5 = R_3PS_4 + PSCl_3,$$
$$3R_2S + P_2S_5 = 2R_3PS_4.$$

The metallic chloride or sulphide requires to be perfectly dry, if possible being fused previous to the experiment. When cold it is finely powdered, intimately mixed with excess of anhydrous pentasulphide of phosphorus and the mixture heated in a small retort, at first slowly and carefully, finally to low redness. If the chloride of the metal is employed, thiophosphoryl chloride distils over and is condensed in a receiver. The excess of phosphorus pentasulphide sublimes into the neck of the retort, leaving the metallic sulphophosphate behind. The latter is purified from any undecomposed metallic chloride or sulphide by washing first with dilute hydrochloric acid, and afterwards with water, filtering and drying. In this manner the normal sulphophosphates of manganese, zinc, ferrous iron, nickel, cadmium, lead, thallium, tin, copper, silver, mercury, bismuth, antimony and arsenic have been obtained in a pure state. In addition to these, normal potassium sulphophosphate K_3PS_4 has also been obtained, but it was found impossible to separate it entirely from phosphorus pentasulphide; efforts to prepare normal sulphophosphates of sodium, ammonium, barium, strontium and calcium have not yet been successful. The normal sulphophosphates of manganese, zinc, ferrous iron, nickel, cadmium and copper were obtained in the form of crystalline powders, the others as fusible solids, which crystallise upon re-solidification. The zinc and cadmium salts are white, the manganese salt green, the iron, nickel, lead, tin and bismuth salts vary from dark brown or grey to black; the thallium, copper, silver, antimony and arsenic salts are yellow; and mercury sulphophosphate is red and very sensitive to light. The whole of them, with the exception of the potassium salt, are insoluble in water and organic solvents, but are slowly attacked by dilute acids with evolution of sulphuretted hydrogen. The potassium salt is decomposed by water alone with liberation of the same gas. It would appear, indeed, that the more negative metals, such as bismuth, antimony and arsenic form sulphophosphates with the greatest facility. The bismuth salt $BiPS_4$ remains in the retort after distilling a mixture of bismuth chloride and phosphorus pentasulphide as a dark-coloured liquid which solidifies to a grey mass upon cooling, and yields upon pulverisation a powder of the colour of red phosphorus. Antimony and arsenic form similar crystalline sulphophosphates of a yellow colour, which are more volatile, however, and, moreover, may be distilled without decomposition. The arsenic salt solidifies in the receiver in a transparent form resembling amber.

IN attempting to prepare a ferric sulphophosphate by the action of phosphorus pentasulphide upon anhydrous ferric chloride, an unexpected artificial synthesis of iron pyrites, FeS_2, in crystals identical with those found in nature, was effected. The reaction occurs as represented by the equation:—

$$3Fe_2Cl_6 + 2P_2S_5 = 3FeCl_2 + 3FeS_2 + 4PSCl_3.$$

The crystals of iron pyrites were formed as a beautiful glistening sublimate just above the heated portion of the retort. They possessed the usual brass-yellow colour and brilliant lustre, and consisted of pentagonal dodecahedrons and cubes or combinations of these forms, together with faces of the octahedron and of the more complicated forms of the cubic system. Moreover, the same mode of striation was observed as is so characteristic of natural crystals.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Polychæta *Staurocephalus rubrovit-*

tatus and *Sphærodorum peripatus*, the Isopod *Apseudes Latreillii*, the Schizopoda *Mysidopsis gibbosa* and *Hemimysis Lamornæ*, specimens of the Brachyuran *Hyas coarctatus* decked with weeds and compound Ascidians, the Lamellibranch *Arca tetragona*, and the Ascidian *Perophora Listeri*. In the floating fauna little change has been observed, but numbers of the Leptomedusan *Laodice cruciata* have been taken on the beds of Zostera. The following animals are now breeding:—The Hydroid *Coryne vaginata*, the Polychæte *Polycirrus aurantiacus*, the Amphipod *Corophium Bonellii*, the Decapod *Palæmon squilla* and the Lamellibranch *Arca tetragona*.

The additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*, ♀) from India, presented by Capt. R. D. Arnold; a Leopard (*Felis pardus*), a Striped Hyæna (*Hyæna striata*) from India, presented by Capt. Currie; a Malayan Bear (*Ursus malayanus*) from Malacca, presented by Mr. M. O. N. Rees-Webbe; four Prairie Marmots (*Cynomys ludovicianus*) from Texas, four Orbicular Horned Lizards (*Phrynosoma orbiculare*) from California, presented by Mr. G. B. Coleman; a Harnessed Antelope (*Tragelaphus scriptus*, ♂) from West Africa, presented by Mr. A. L. Jones; four Galapagan Doves (*Zenaida galapagensis*) from the Galapagos Islands, an Auriculated Dove (*Zenaida auriculata*) from Chili, presented by Capt. Hedworth Lambton, R.N.; a Guilding's Amazon (*Chrysotis guildingi*) from St. Vincent, W.I., three Boddaert's Snakes (*Coluber boddaerti*), three Carinated Snakes (*Herpetodryas carinatus*) from Grenada, W.I., presented by the Hon. Sir Walter F. Hely-Hutchinson, K.C.M.G.; two Red-tailed Buzzards (*Buteo borealis*) from Jamaica, presented by Mr. Charles B. Taylor; a Crested Porcupine (*Hystrix cristatus*) from Africa, an Australian Cassowary (*Casuarius australis*) from Australia, two Blyth's Tragopans (*Ceriornis blythi*, ♂ ♀) from Upper Assam, deposited; two African Tantalus (*Pseudotantalus ibis*) from West Africa, two Demoiselle Cranes (*Grus virgo*), six Moorish Tortoises (*Testudo mauritanica*) from North Africa, a Secretary Vulture (*Serpentarius reptilivorus*) from South Africa, two Common Rheas (*Rhea americana*, ♂ ♀) from South America, two Cabot's Tragopans (*Ceriornis caboti*, ♂ =) from China, four Crested Pigeons (*Ocyphaps lophotes*) from Australia, purchased; a Mule Deer (*Cariacus macrotis*, ♂), a Martineta Tinamou (*Calodromas elegans*), seven Summer Ducks (*Œx sponsa*), seven Mandarin Ducks (*Œx galericulata*), three Australian Wild Ducks (*Anas superciliosa*), six Magellanic Geese (*Bernicla magellanica*), three Peacock Pheasants (*Polyplectron chinquis*), three Cheer Pheasants (*Phasianus wallichii*), six Gold Pheasants (*Thaumalea picta*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

Ephemeris of the New Comet.—Prof. E. Lamp gives the following elements for Quénisset's comet in *Astr. Nach.*, No. 3173:—

$$\tau = 1893 \text{ July } 7\cdot3140, \text{ Berlin Mean Time.}$$

$$\left.\begin{aligned}\omega &= 47^\circ\ 6'\cdot72\\ \Omega &= 337\ \ 20\cdot93\\ i &= 160\ \ \ 1\cdot88\end{aligned}\right\}1893\cdot0$$

$$\log q = 9\cdot82948$$

From these elements the following ephemeris has been computed by Dr. Kreutz:—

1893		R.A. app. h. m. s.		Decl. app. ° ′
July 21	...	11 27 28	...	+25 19·1
22	...	11 32 44	...	24 1·0
23	...	11 37 19	...	22 49·8
27	...	11 50 50	...	18 59·8
31	...	11 59 24	...	16 12·8
Aug. 4	...	12 5 18	...	14 6·2

The comet is decreasing in brightness.

The following communication has been received from South Kensington:—

"The comet was observed by Mr. Shackleton as early as July 11, before any notice of it had been received, but owing to the unfavourable state of the sky he was unable to perfectly satisfy himself that it was a new object. Although the sky was partially clear on July 14, the comet could not be seen from the Observatory as it was unfortunately very low in the north-west, and fell within the glare of the illuminations of the Imperial Institute. On Sunday, July 16, the sky was much clearer, and the comet was easily picked up with a small telescope. Observations with the equatorial, however, were impossible. Its position was roughly estimated as R.A. 10h. 41m., Decl. 33° N., and it was about equal in brightness to a fourth magnitude star. On July 17 the sky was clear, and the comet was observed by Mr. Shackleton with a 6-inch telescope temporarily erected in an elevated position; a faint tail was then observed, extending further on the southern than on the northern side of the axis. Owing to the absence of an equatorial mounting to the telescope employed, spectroscopic observations were very difficult, but three bright bands—probably the well-known bands of carbon which so frequently appear in cometary spectra—were recognised. There was only a very feeble continuous spectrum."

Comet Finlay (1886 vii.).—The ephemeris of this comet for the ensuing week is as follows:—

12h. *Paris. M.T.*

1893.		R.A. (app.) h. m. s.		Decl. (app.) ° ′ ″
July 20	...	4 30 54·16	...	+20 33 51·0
21	...	35 18·76	...	20 45 55·3
22	...	39 41·86	...	20 57 28·5
23	...	44 3·43	...	21 8 31·0
24	...	48 23·42	...	21 19 3·0
25	...	52 41·80	...	21 29 4·9
26	...	4 56 58·53	...	21 38 37·0
27	...	5 1 13·57	...	21 47 39·8

Observations of the Planet Victoria.—Observations of this planet were specially undertaken in 1889 to determine the mean horizontal parallax of the sun, and afterwards to compare the calculated with the observed places of the planet with the object of proving the existence of a short periodic perturbation, as would occur if, for example, an erroneous value for the lunar equation had been adopted. The observations (*Bulletin Astronomique*, tome x., June 1893) were of three kinds, as Dr. Gill in this note informs us—(1) meridian observations of the planet and comparison stars, made at twenty-one observatories during the opposition in 1889; (2) heliometric triangulation of comparison stars, consisting of measures of the distances of the stars less than 2° apart and measures of the angles of position (these observations were made at the observatories of Yale College, Göttingen, Bamberg, and at the Cape during the year 1890); and (3) heliometric observations of the angular distance of the planet from two comparison stars, one above and the other below the apparent position of the planet in the sky. This work was accomplished by the same observatories with the addition of that at Leipzig.

In this preliminary note, Dr. Gill refers only to the general results of the discussion. The following table shows the values for the mean horizontal parallax of the sun as deduced from the discussion of the observations in groups:—

Group.	Limit of groups.	M.S. parallax.	Rel. weight.	Δα C−O.	Δδ C−O.
		″		″	″
I.	June 10–12	8·723	0·8	—	—
II.	,, 15–19	804	12·3	−0·01	+0·00
III.	,, 19–26	828	15·4	+0·04	+0·02
IV.	,, 26–July 3	872	29·2	−0·02	−0·07
V.	July 3–9	789	9·8	−0·13	+0·03
VI.	,, 9–12	857	17·5	+0·09	+0·04
VII.	,, 15–20	793	19·5	+0·07	+0·12
VIII.	,, 20–23	809	20·0	−0·05	+0·09
IX.	,, 23–25	742	14·0	−0·03	−0·03
X.	,, 25–28	806	11·2	−0·07	+0·02
XI.	,, 28–Aug. 4	777	33·4	+0·01	−0·12
XII.	Aug. 4–10	826	20·0	+0·11	−0·04
XIII.	,, 10–17	816	26·0	−0·05	0·00
XIV	,, 17–22	819	19·9	+0·04	+0·06
XV.	,, 22–27	8·738	13·3	−0·04	+0·01

The mean of these gives the value

π = 8″·809, with a probable error of ± 0″·0066.